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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,968	08/15/2004	Edward Jobson	6730.057.PCUS00	9378
65858 7590 12/31/2007 NOVAK DRUCE AND QUIGG LLP (Volvo) 1000 LOUISIANA STREET FIFTY-THIRD FLOOR HOUSTON, TX 77002			EXAMINER DUONG, THANH P	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 12/31/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/710,968

Applicant(s)

JOBSON ET AL.

Examiner

Tom P. Duong

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 10/710,969.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*Tom Duong*  
*12/19/07*

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 8/15/04; 12/21/04
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-19, 23-24, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 1,016,777 (hereinafter EP '777).

Regarding claim 1, EP '777 discloses a device (Fig. 2) for treatment of a gas flow, the device comprising: at least one body (1b), at least one first opening (11) for entrance of an incoming gas flow to said body (1b) and at least one second opening (12) for the exit of an outgoing gas flow from said body (1b); said body (1b) comprising a plurality of gas flow passages (3) arranged to permit heat exchange between the gas flows in adjacent passages (Col. 6, lines 15-19); at least one distribution section (space section from the inlet conical section and inlet side 1b) in communication with the first opening (11) and with the gas flow passages (3) to distribute the incoming gas flow to the gas flow passages (3); and at least one gas flow passage section (flow channels) including said gas flow passages (flow channels) and which is configured to permit heat exchange and to cause a conversion in the composition of the gas (section 0009).

Regarding claim 2, EP '777 discloses the distribution section (space section from the inlet conical section and inlet side 1b), is configured to distribute the incoming gas flow within the individual gas flow passages (flow channels).

Regarding claim 3, EP '777 appears to disclose the distribution section (space section from the inlet conical section and inlet side 1b) is configured to bring about a substantially uniform gas flow within the individual gas flow passages (flow channels).

Regarding claim 4, EP '777 shows the distribution section (space section from the inlet conical section and inlet side 1b) forms a part of the body (1b).

Regarding claim 5, EP '777 discloses the distribution section (space section from the inlet conical section and inlet side 1b) is in communication with the second opening (12) to lead the outgoing gas flow out from the gas flow passages.

Regarding claim 6, EP '777 shows the gas flow passages extend essentially parallel to each other (Fig. 3).

Regarding claim 7, EP '777 discloses the main direction of the gas flow in one gas flow passage is essentially the opposite (counter-current flow) of the main direction of the gas flow in at least one of the adjacent gas flow passages (section 0011). Note, the manner of operating a disclosed device does not further limit an apparatus claim. See *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). MPEP 2114.

Regarding claim 8, EP '777 discloses the gas flow passages (3) further comprise inlet passages (14,15) configured for conveying an incoming gas flow and outlet passages (12) configured for conveying an outgoing gas flow, and a reversing zone (9,10) arranged so that gas entering said reversing zone (9,10) from the inlet passages

is permitted to change direction and flow back through the outlet passages (sections 0029-0030).

Regarding claim 9, EP '777 discloses the reversing zone (9,10) comprises a reversing chamber (9,10).

Regarding claim 10, EP '777 discloses the body (1b) comprises a strip (1a) folded into a zigzag structure (section 0024), the spacer means (section 0024) being arranged between the foldings (4,5) of the zigzag structure (section 0024) in such a way that a distance is achieved between two foldings (4,5) that face each other in the zigzag structure (section 0024), and said gas flow passages (3) are thereby formed between the foldings (4,5) of the zigzag structure (section 0024), and that said spacer means (section 0024) are arranged to facilitate the distribution of the incoming gas flow in the distribution section.

Regarding claim 11, EP '777 discloses body (1b) comprises a strip (1a) folded into a zigzag structure (section 0024), a surface of the strip (1a) at least partly exhibiting a three-dimensional pattern (pleated patterns as shown in Fig. 1), said three-dimensional pattern being arranged to give rise to contact points and gaps between two foldings (4,5) that face each other in the zigzag structure (section 0024), and the gas flow passages (3) being formed in the gaps between the foldings (4,5) of the zigzag structure (section 0024), and the surface of at least one of two foldings (4,5) that face each other differing from said three-dimensional pattern (pleated patterns) in the distribution section (space section from the inlet conical section and inlet side 1b) in such a way that the distribution of the incoming gas flow is facilitated.

Regarding claim 12, EP '777 discloses a casing (6) is provided with said first opening (11) and said second opening (12) encloses the zigzag structure (section 0024).

Regarding claim 13, EP '777 discloses distribution section (space section from the inlet conical section and inlet side 1b, and space section in the reversing chamber ) and the gas flow passage section (3) form separate units arranged together in such a way that gas can flow from one section to the other with the distribution section and the gas flow passage section (3) being joined to each other.

Regarding claim 14, EP '777 discloses the distribution section (space section formed in the inlet conical section and inlet side 1b, and space section formed in the reversing chamber) comprises a wall structure (6a, 6b, 6c, 6d) forming: at least one first channel (channel in the inlet conical section) to which the incoming gas flow is fed; and a plurality of second channels (channels on the inlet side of the zigzag structure) that extend from said first channel (channel in the inlet conical section) and which second channels (channels on the inlet side of the zigzag structure) are open to the gas flow passages (3) that are configured for an incoming gas flow.

Regarding claim 15, EP '777 discloses the first channel (3) is closed to the gas flow passages (Fig. 2).

Regarding claim 16, EP '777 discloses the wall structure forms a plurality of third channels (channels on the outlet side of the zigzag structure) that are open to the gas flow passages (3) that are intended for an outgoing gas flow, preferably said third

channels are formed between said second channels (channels on the inlet side of the zigzag structure) using common walls.

Regarding claim 17, EP '777 discloses the distribution section (space section formed in the inlet conical section and inlet side 1b, and space section formed in the reversing chamber) comprises a zigzag shaped wall structure (pleated channels) forming a first and a second set of channels, one set on each side said zigzag shaped structure, wherein said first set of channels (channels on the inlet side of the zigzag structure) are open to the gas flow passages (3) that are intended for an incoming gas flow and said second set of channels (channels on the outlet side of the zigzag structure) are open to the gas flow passages (3) that are intended for an outgoing gas flow, and wherein the incoming gas flow is fed to the first set of channels (channels on the inlet side of the zigzag structure).

Regarding claim 18, EP '777 shows the distribution section (space section formed in the inlet conical section and inlet side 1b, and space section formed in the reversing chamber) in at least one certain direction exhibits a substantially unchanged cross section.

Regarding claim 19, the recitation with respect to "the distribution section is produced by extruding means" is directed to the process of fabricating the device, which is not germane to the issue of patentability of the device itself.

Regarding claim 23, EP '777 discloses the carrier body is coated with catalyst material (section 0015).

Regarding claim 24, EP '777 discloses the carrier body is coated with adsorption/desorption agent (section 0018).

Regarding claim 30, EP '777 shows the body has a three-dimensional corrugation pattern (Fig. 3).

Note, instant claims structurally read on the apparatus of EP '777.

2. Claims 1, 21, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Fratzer et al. (4,385,032).

Regarding claim 1, Fratzer et al. discloses a device for treatment of a gas flow (Fig. 1), the device comprising: at least one body (5), at least one first opening (opening at upstream of body 5) for entrance of an incoming gas flow to said body (5) and at least one second opening (downstream opening of body 5) for the exit of an outgoing gas flow from said body (5); said body (5) comprising a plurality of gas flow passages (corrugated channels, Fig. 3) arranged to permit heat exchange between the gas flows in adjacent passages; at least one distribution section (gas inlet tube 4 and elongated openings 14) in communication with the first opening (openings at upstream of body 5) and with the gas flow passages (corrugated channels, Fig. 3) to distribute the incoming gas flow to the gas flow passages (corrugated channels, Fig. 3); and at least one gas flow passage section (corrugated channels, Fig. 3) including said gas flow passages and which is configured to permit heat exchange and to cause a conversion in the composition of the gas (Col. 1, lines 9-15).



Regarding claim 21, Fratzer et al. discloses the body (5) has a substantially cylindrical shape (Fig. 3) and the body (5) comprises an internal cavity (tube 4) that extends in the longitudinal direction of the body (5), and that at least one first (openings at upstream of body 5) or second opening (opening at downstream of body 5) is directed towards said cavity (tube 4) so that the gas flow at least partly is led via said cavity (tube 4).

Regarding claim 31, Fratzer et al. discloses that the body (5) has a general shape of a circular cylinder (Fig. 3).

Note, instant claims structurally read on the apparatus of Fratzer et al.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP '777.

EP '777 discloses the device treats exhaust gas from vehicle engine (section 0014). EP '777 further discloses that the device can also be used to treat emission from control industries (section 0054). Therefore, it would have been obvious in view of EP

'777 to one having ordinary skill in the art that the device can also be utilized to treat exhaust gas from "mobile" internal combustion engine, being that fact that the treatment device is portable and can be easily integrated with other component that generates harmful exhaust.

4. Claims 20, 22, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP '777 in view of WO 02/29218.

Regarding claim 20, EP '777 essentially discloses the features of the claimed invention except the gas flow passage is made of ceramic material. WO 02/29218 teaches that it is conventional to fabricate the treatment device from metal or ceramic material. Thus, it would have been obvious in view of WO 02/29218 to one having ordinary skill in the art to select the appropriate material including ceramic material as taught by WO 02/29218 for the device of EP '777, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice and the selection of ceramic material for the treatment device is commercially available as evidenced by WO 02/29218.

Regarding claim 22, the zigzag structure of EP '777 appears to act as a filtering section for removing particulates from the gas.

WO 02/29218 makes it clear that the gas treatment device (18) is adapted for filtering particles from the gas via gas ducts (21) (Abstract and Fig. 4).

Thus, it would have been obvious in view of WO 02/29218 to one having ordinary skill in the art to utilize the zigzag structure of EP '777 as a filtering section as taught by WO 02/29218 in order to facilitate in removing particulates from the gas.

Regarding claims 25 and 26, EP '777 discloses the an optional heating element (13) can be provided in the device to control the reaction temperature in the body (1b) but fails to disclose a cooling flanges arrange in the body and arrangement to introduce cooling air into the body to control the temperature of the incoming gas flow.

WO 02/29218 teaches that it is desirable to provide a cooling flange in the exhaust treatment device and air pump arrangement to provide air to oxidize hydrocarbon (page 14, lines 15-27) and arrangement facilitates in controlling the temperature in exhaust gas treatment device and to protect the material (body carrier) from high temperature (page 20, lines 12-35).

Thus, it would have been obvious in view of WO 02/29218 to one having ordinary skill in the art to modify the treatment device of EP '777 with a cooling flange and arrangement for oxidizing species to control the reaction and temperature in the exhaust gas treatment device.

Note, the recitation of "oxidizing species, such as hydrocarbons" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969).

Regarding claim 27, EP '777 essentially discloses the treatment device of the claimed invention except a device is in connection to a combustion engine and a system

for controlling the composition of the incoming gas flow comprises an arrangement for controlling the operation of the combustion engine, which operation in turn effects the composition of the incoming gas flow.

WO 02/29218 teaches that the treatment device is in connection with the combustion engine (page. 3, lines 10-35) and the engine can be controlled to allow a large quantity of hydrocarbon in the exhaust to be treated in the exhaust treatment device (page 14, lines 15-27).

Thus, it would have been obvious in view of WO 02/29218 to one having ordinary skill in the art to modify the treatment device of EP '777 with controlling scheme as taught by WO 02/29218 in order to control the engine to allow large quantity of hydrocarbon to be treated in the exhaust gas flow.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom P. Duong whose telephone number is (571) 272-2794. The examiner can normally be reached on 8:00AM - 4:30PM (IFP).

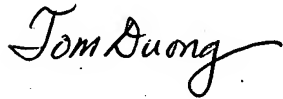
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Tom Duong  
December 19, 2007

A handwritten signature in cursive script that reads "Tom Duong".